AMENDMENTS TO THE CLAIMS

The following is a complete, marked-up listing of revised claims with a status identifier in parenthesis, underlined text indicating insertions, and strike through and/or double-bracketed text indicating deletions.

LISTING OF CLAIMS

1-33. (Cancelled)

34. (Currently Amended) A system for detecting at least one physical characteristic of an elastic structure subjected to a force under a motion, said structure being provided with at least one sensor comprising ~~two~~ a first and a second electrodes ~~and~~ a piezoelectric material, which upon deformation generates a charge displacement in the material giving rise to a voltage between said first and second electrodes being directly proportional to the force causing the deformation, said voltage being ~~and~~ convertible to a signal representing said characteristic, and said system comprising at least one detector comprising a receiver for receiving said signal representing said characteristic, wherein said sensor ~~is a passive sensor comprising a passive transmitter (transmitting antenna in the form of a conductor extending from an end of said sensor, and that a coupling capacitance is obtainable between the conductor and a receiving conductive element (receiving antenna) thus enabling contactless signal transmission (capacitive coupling) there between~~further comprises a first sensor conductor being connected to said first electrode and a second sensor conductor being connected to said second electrode, said first and said second sensor conductors being arranged as antennas, and wherein said detector comprises a receiver antenna arranged adjacent to said elastic structure for capacitively sensing said voltage between said first and said second sensor conductors, thereby enabling determination of said characteristic.

35. (Previously Presented) The system of claim 34, wherein said structure is a flat structure.

36. (Previously Presented) The system according to claim 34, wherein said structure is a belt, a conveyer, a wire, a sheet material, a paper sheet, a fabric, a cloth, a printing paper, paper

money, or bank notes, and said structure cooperates/interacts with at least one substantially cylindrical rotating body.

37. (Previously Presented) The system according to claim 36, wherein said at least one substantially cylindrical rotating body is a roll.

38. (Previously Presented) The system according to claim 37, wherein said structure cooperates/interacts with two rolls.

39. (Previously Presented) The system according to claim 37, wherein said structure cooperates/interacts with three rolls.

40. (Previously Presented) The system of claim 34, wherein said structure is a substantially cylindrical rotating structure.

41. (Previously Presented) The system according to claim 34, wherein the structure comprises a tyre.

42. (Previously Presented) The system according to claim 34, wherein the structure comprises a roll, a roller, a cylinder, a delivery bowl, rubber-covered cylinder, drum, or a hole cylinder.

43. (Previously Presented) The system according to claim 34, wherein the structure is a roll or a cylinder feeding a sheet material.

44. (Previously Presented) The system of claim 34, wherein said sensor, including the transmitter, is arranged on or inside said structure.

45. (Previously Presented) The system of claim 34, wherein said structure comprises an oblong structure passing through a pressing arrangement.

46. (Previously Presented) The system according to claim 34, wherein said structure is a conveyer shaped structure in a nip formed by rolls, and at least one sensor is arranged on the surface of the conveyer shaped structure or substantially within the conveyer shaped structure for detecting the pressure and pressure distribution in the nip between the rolls.

47. (Previously Presented) The system according to claim 46, wherein the nip is present in a nip roll, a roller press, an Yankee machine, a shoe press, or a smoothing coating machine of a paper-manufacturing machine.

48. (Previously Presented) The system according to claim 47, wherein the characteristic(s) detected is/are the nip force, nip pressure/pressure distribution and/or nip width of the rolls in a nip roll press.

49. (Previously Presented) The system of claim 34, wherein the sensor is arranged in one of or several of a longitudinal, radial or transversal direction of the structure.

50. (Previously Presented) The system of claim 34, wherein the sensor is arranged to provide one or several of absolute linear velocity or skid characteristic of the structure.

51. (Previously Presented) The system according to claim 37, wherein the roll(s) is/are arranged in a paper-manufacturing machine, said structure is a belt or a conveyer, and sensors are arranged inside the material of the belt, either in the longitudinal and/or transverse direction of the belt.

52. (Previously Presented) The system according to claim 37, wherein the roll(s) is/are arranged in a printer application, said structure is a printing paper, and at least one sensor is arranged on the surface of the printing paper or substantially within the printing paper.

53. (Previously Presented) The system according to claim 52, wherein the sensor comprises a foil integrated substantially inside the paper.

54. (Previously Presented) The system according to claim 37, wherein the rolls are arranged in a banking paper application, said structure is bank notes or paper money, and the sensor is arranged as a strip on the surface of the bank note/paper money or substantially within the bank note/paper money.

55. (Previously Presented) The system of claim 34, wherein one or several sensors constitute(s) a bar code in the structure.

56. (Currently Amended) The system according to claim 40, wherein the sensor deforms during a time period, whereby a part of the structure that contains the sensor is in contact with a surface, whereby during said time period, an electric signal or ~~(~~voltage/current pulse~~)~~ is created, and a linear velocity of rotation is obtained if the length of the sensor is known by dividing this length by the duration of the voltage/current pulse.

57. (Previously Presented) The system of claim 56, wherein additional information is provided by a frequency at which pulses occur due to the rotation of the structure, both related to each other and to a linear velocity of the structure motion, and a difference in linear velocity of the structure calculated from the pulse duration and from the frequency of structure rotation varying in time indicates skid.

58. (Previously Presented) The system as claimed in claim 34, wherein the sensor is formed as a cable, a filament, a strip, a foil, a thread, a film, a particle or the like.

59. (Cancelled)

60. (Currently Amended) The system according to claim ~~59~~ 34, wherein the ~~receiving conductive element~~ receiver antenna comprises two conductive plates ~~(receiving antennas)~~.

61. (Previously Presented) The system according to claim 34, wherein the receiver comprises a differential amplifier, an analogue-digital converter, and a signal-processing unit.

62. (Previously Presented) The system according to claim 34, wherein several sensors are placed in an overlapping arrangement in the structure allowing continuous signal acquisition and measurement of pressure distribution in the width direction of the structure.

63. (Previously Presented) The system according to claim 34, wherein the sensor comprises two conductors extending from the ends of the sensor, and the sensor being folded providing two shanks, one of which can be subjected to a force, such that the sensor operates in bending mode.

64. (Currently Amended) The system according to claim 59, wherein the ~~transmitting antennas~~first and second sensor conductors are spaced apart in such a way that minimum or null electric field lines are between the ~~transmitting antennas~~first and second sensor conductors, and the main part of the electric field lines are between each pair of ~~transmitting and receiving antennas~~sensor conductor and receiver antenna.

65. (Currently Amended) The system according to claim 59, wherein ~~the~~ an extension of the ~~receiving~~ receiver antennas is larger than ~~the~~ an extension of the ~~transmitting antennas~~first and second sensor conductors.

66. (Currently Amended) The system according to claim 34, wherein one ~~receiving~~ receiver antenna is used for each ~~transmitting antenna~~sensor conductor.

67. (Previously Presented) The system according to claim 34, wherein the piezoelectric material is polyvinylidenfluoride (PVDF).

68. (Currently Amended) The system according to claim 34, wherein a differential signal between a ~~loaded sensor (i.e. a~~ sensor subjected to said force~~) and an unloaded sensor is used~~ and a sensor not being subjected to said force is used.

69. (Previously Presented) The system according to claim 68, wherein the differential signal technique is used to measure temperature variations.

70. (Currently Amended) A method of detecting at least one physical characteristic of an elastic structure subjected to a force under a motion using the system according to claim 34, the method comprising ~~the steps of~~:

providing said structure with at least one ~~passive~~ sensor comprising ~~two~~ a first and a second electrodes and a piezoelectric material, which upon deformation generates a charge displacement in the material giving rise to a voltage between said first and second electrodes being directly proportional to the force causing the deformation, said voltage being ~~and~~ convertible to a signal representing said characteristic, wherein said sensor further comprises a first sensor conductor being connected to said first electrode and a second sensor conductor being connected to said second electrode, said first and second sensor conductors being arranged as antennas; ~~said sensor being a passive sensor comprising a passive transmitter (transmitting antenna) in the form of a conductor extending from an end of said sensor;~~

~~providing at lest one detector comprising a receiver for receiving said signal representing said characteristic, and~~

~~providing a coupling capacitance between the conductor and a receiving conductive element (receiving antenna) thus enabling contactless signal transmission (capacitive coupling) there between~~

providing at least one detector comprising a receiver antenna, in such a way that said receiver antenna is arranged adjacent to said elastic structure; and

capacitively sensing a voltage between said first and second sensor conductors by means of said receiver antenna, thereby enabling determination of said characteristic.

71. (Currently Amended) A sensor arrangement for incorporation into an elastic structure and for providing at least one physical characteristic of said structure when subjected to a force under a motion, said sensor comprising ~~two~~ a first and a second electrodes and a piezoelectric material, which upon deformation generates a charge displacement in the

material giving rise to a voltage between said first and second electrodes being directly proportional to the force causing the deformation, said voltage being ~~and~~ convertible to a signal representing said characteristic, wherein said sensor further comprises a first sensor conductor being connected to said first electrode and a second sensor conductor being connected to said second electrode, said first and second sensor conductors being arranged as antennas in such a way that capacitive sensing of said voltage between said first and said second sensor conductors is enabled when said sensor is incorporated in the elastic structure ~~for providing a signal to a passive transmitting element and receivable by a receiver, wherein said sensor is a passive sensor comprising a passive transmitter (transmitting antenna) in the form of a conductor extending from an end of said sensor, and that a coupling capacitance is obtainable between the conductor and a receiving conductive element (receiving antenna) thus enabling contactless signal transmission (capacitive coupling) there between~~.

72. (Previously Presented) The sensor arrangement according to claim 71, wherein the sensor is formed as a cable, a filament, a strip, a foil, a thread, a film, a particle or the like.

73. (Cancelled)

74. (Currently Amended) The sensor arrangement according to claim ~~73~~71, wherein ~~the transmitting antennas~~ said first and second sensor conductors are spaced apart in such a way that minimum or null electric field lines are between the transmitting antennas.

75. (Previously Presented) The sensor arrangement according claim 71, wherein the piezoelectric material is polyvinylidenfluoride (PVDF).

76. (Previously Presented) Use of a system according to claim 34 in an apparatus comprising at least one substantially cylindrical rotating body feeding a sheet material for detecting at least one physical characteristic of said sheet material.

77. (Previously Presented) The use according to claim 76, wherein the movement, presence of material, rotation speed, and/or sliding characteristics is/are detected.

78. (Previously Presented) The use according to claim 76, wherein said sensor is used in a paper-manufacturing machine for detecting a characteristic of a belt or a conveyer cooperating/interacting with at least one substantially cylindrical rotating body feeding said belt, said sensor(s) being integrated into the belt/conveyer, either in the longitudinal and/or transverse direction of the belt.

79. (Previously Presented) The use according to claim 76, wherein said sheet material is a conveyer shaped structure in a nip formed by rolls, said sensor being arranged on the surface of the conveyer shaped structure or substantially within the conveyer shaped structure for detecting the pressure and pressure distribution in the nip between the rolls.

80. (Previously Presented) The use according to claim 79, wherein the nip is present in a nip roll, a roller press, an Yankee machine, a shoe press, or a smoothing coating machine of a paper-manufacturing machine.

81. (Previously Presented) The use according to claim 80, wherein the characteristic(s) detected is/are the nip force, nip pressure and/or nip width of the rolls in a nip roll press.

82. (Previously Presented) The use according to claim 76, wherein said sensor is used in a printer application for detecting a characteristic of a printing paper cooperating/interacting with at least one substantially cylindrical rotating body feeding said printing paper, said sensor(s) being arranged on the surface of the printing paper or substantially within the printer paper.

83. (Previously Presented) The use according to claim 76, wherein the sensor is used in a banking paper application for detecting a characteristic of bank notes or paper money cooperating/interacting with at least one substantially cylindrical rotating body feeding said

bank notes/paper money, said sensor(s) being arranged on the surface of the bank notes/paper money or substantially within the bank notes/paper money.

84. (New) A belt having a sensor arrangement according to claim 71 embedded therein, thereby enabling detection of a force acting on said belt.